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the basis of classification is essentially static, and ignores the genetic relationships of both the habitats and the formations. Consequently, proximity in the resulting scheme of classification does not necessarily imply near relationship, nor wide separation a lack of connection.

The second part contains a summary of observations on the influence of the various ecological factors. These include the usual factors classified as climatic, physical and chemical, and biotic.

The means of dispersal, the geographic distribution of the various families of algae, the algal populations of various formations, and the periodicity of the algal flora form the topics of the last division of the memoir. The discussion of periodicity is largely drawn from COMERE's previous paper on this subject. The division of the algal flora into vernal, estival, autumnal, and hyemal groups, it should be noted, is really a characterization of the seasons by means of algal reproduction, rather than a classification of algae on the basis of their seasonal phenomena. With regard to the concentration of natural waters, the usual assumption is made that there exists an inverse relation between the height of the water level and the concentration. This leaves out of account the removal of solutes by the adsorption and subsequent settling of the solid particles in these waters, which it seems is much more important in determining concentration than changes in volume. But these points to which exception may be taken are few compared with the great number of topics discussed. —E. N. TRANSEAU.

British North Borneo.—Miss GIBBS[7] has published a notable contribution dealing with the flora of North Borneo. The first part deals with the ecological features of a most interesting region. The general character of the country is discussed, as to its orography and meteorology, and also the general plant-formations under the titles "secondary formations" and "primary forest." A very full itinerary makes the aspects of the flora vivid; and there is a special description of the plant formations on Mt. Kinabalu, the highest mountain of the Malay Archipelago, which was first ascended in 1851 by a botanist, Sir HUGH LOW, then colonial secretary of Labuan.

In the systematic account (184 pp.) of the remarkably large collection of plants made in January to March 1910, Miss GIBBS has had the assistance of several specialists. The collections include plants of all groups from algae to seed plants. Descriptions of about 85 new species, well distributed throughout the families of seed plants, are published, including the following new genera: *Phyllocrater* and *Cowiea* (Rubiaceae), *Sigmatochilus* (Orchidaceae), and *Lophoschoenus* (Cyperaceae). As might be expected, Orchidaceae secure the largest representation of new species, 21 in number. *Elatostema* illustrates how a genus now and then becomes enriched suddenly in a new region, 7 new species being added to its list. Among the new species is a *Dacrydium*, which means more than a new angiospermous species. The ratio of increase in the number of species as the flora of the tropics becomes known is so great that a new census of the plant kingdom is called for, as the old enumerations, so often quoted in textbooks, are wide of the mark.—J. M. C.

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[7] GIBBS, LILIAN S., A contribution to the flora and plant formations of Mount Kinabalu and the Highlands of British North Borneo. Jour. Linn. Soc. Bot. **42**: 1–240. *figs. 8. pls. 1–8.* 1914.

Syncotyly and schizocotyly.—COMPTON[8] has made a somewhat extensive investigation of dicotyledonous seedlings with a single cotyledon, and also of those with more than two cotyledons. The terminology of the title indicates his belief that the single cotyledon of a dicotyledonous seedling is the equivalent of two fused cotyledons; and that extra cotyledons represent a splitting of cotyledons.

The conclusions in reference to syncotyly are in substance as follows: syncotyly occurs in a great number of species, normally or "teratologically"; in species with albuminous seeds syncotyly usually gives rise to a symmetrical cotyledonary tube, the reason probably being "the homogeneity of the surroundings of the embryo before germination"; in species with exalbuminous seeds syncotyly is usually asymmetrical, the cotyledons uniting along one edge only, the suggested reason being "the asymmetry of its [embryo] environment, which produces accumbency and other irregularities."

The study of schizocotyly is made the basis of a discussion as to the primitive condition of cotyledony. Arguments have been advanced for both dicotyledony and polycotyledony as the primitive condition. The author's judgment inclines to dicotyledony as the primitive condition. If this historical question must be settled, it will probably have to await the discovery of the embryos of Cycadofilicales.—J. M. C.

Tyloses.—The extensive collections of the Forest Products Laboratory have enabled Miss GERRY to undertake a survey of the occurrence of tyloses.[9] Of the 45 genera of hardwoods examined, 24 are found to contain tyloses. These proliferous growths into the vessels naturally reach their most marked development in ring-porous woods, such as oak, although in this genus black oaks rarely show tyloses, while white oaks show abundant evidences. Woods in which parenchyma surrounds the vessels show the best development of tyloses, though the proximity of medullary rays to vessels is also a factor. Contrary to previous accounts, Miss GERRY finds tyloses in the sap wood of all species in which they occur in the heart wood, and she produces photographs of hickory which illustrate the point. With respect to soft woods, *Pinus* is the only genus in which true tyloses have been found, and here they are held

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[8] COMPTON, R. H., An anatomical study of syncotyly and schizocotyly. Ann. Botany **27**:793–821. *figs. 41.* 1913.

[9] GERRY, E., Tyloses; their occurrence and practical significance in some American woods. Jour. Agric. Research **1**:445–470. *pls. 52–59.* 1914.